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Toilet disinfectant release apparatus

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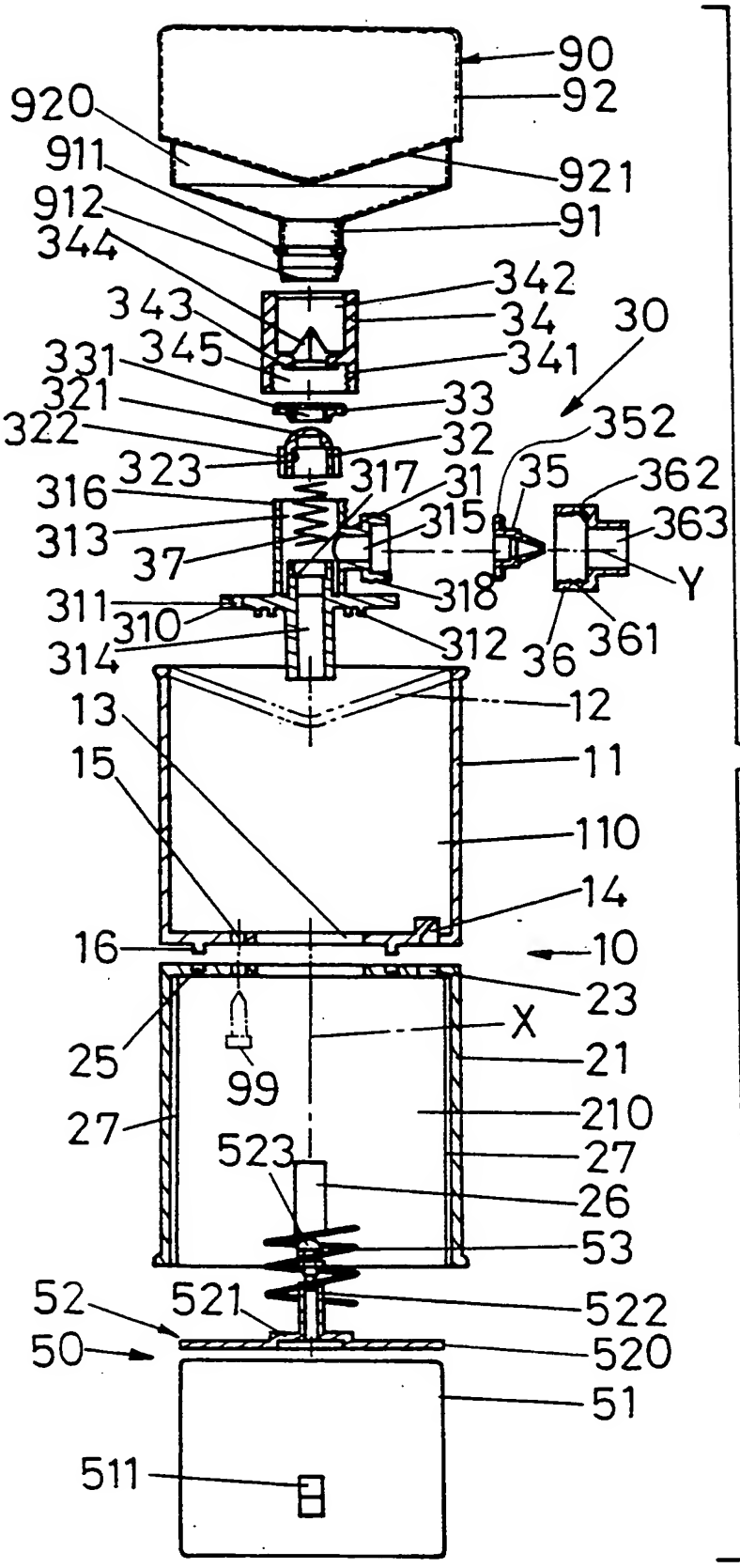
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FIG. 2

CLAIMS

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1. A toilet disinfectant release apparatus to be disposed into a toilet tank which is filled with water for dispensing a substantial constant amount of liquid disinfectant contained within a container into the toilet tank to mix with the water, said apparatus comprising:

a housing defining therein a first interior space and having a top section on which a support rim is formed and a bottom section inside which guiding slots are formed, the housing being supported inside the toilet tank by means of hanger means supported on the toilet tank to have at least the lower section thereof dip into the water;

supply control means comprising a tubular body securely fixed inside the first interior space of the housing and extending along a central axis which is along an up-down direction, the tubular body defining therein an upper, disinfectant reservoir and a lower, piston shaft in communication with the disinfectant reservoir, a tubular sideward extension formed on the tubular body and extending along a direction not parallel with the central axis, the tubular sideward extension having an outlet in fluid communication with the disinfectant reservoir, a tube-like connector mounted to the disinfectant reservoir and having defined therein an upper space for receiving therein a mouth of the disinfectant container and a lower space with a flow passage formed therebetween, the lower space being in communication with the disinfectant reservoir, a check movably received within the disinfectant reservoir and biased by a first spring to enter the lower space of the connector for closing the first flow passage formed between the upper and lower spaces of the connector, a one way nozzle secured to an outlet of the sideward

extension and having a nozzle mouth formed thereon for injecting the disinfectant into the housing;

a buoy up-and-down movably received within the lower section of the housing and having side projections respectively received within the guiding slots formed on the lower section of the housing to guide the up-and-down movement of the buoy within the housing;

first means for moving with the buoy, said means comprising an elongated rod extending therefrom with a piston secured on a free end thereof, the piston being movably receivable within the piston shaft; and

second means for facilitating lowering down of the first means when the buoy lowers down with the water level inside the toilet tank.

2. The apparatus as claimed in Claim 1, wherein the hanger means comprises a U-shaped member fit over a side wall of the toilet tank and a device support section extending from the U-shaped member to be receivably engageable with two opposite slots formed on side wall of the housing for supporting the housing inside the toilet tank, the housing comprising a plurality of pits of different altitudes formed between the two slots to cooperate with a plurality of bosses formed on the device support section of the U-shaped member for location-adjustably positioning the housing relative to the hanger means so as to adjust the location of the housing relative to the toilet tank.

3. The apparatus as claimed in Claim 1, wherein the housing comprises an upper member defining the upper section of the housing and a lower member defining the lower section of the housing, the upper member having a closed bottom with a central hole formed thereon, the lower member having a closed top with a central hole formed thereon,

the lower housing member being secured to the upper housing member by means of fasteners with the closed top thereof in contact with the closed bottom of the upper housing member and the central holes thereof overlapping each other to define a seat for receiving and supporting the tubular body which is secured on the closed top of the lower housing member by the fasteners, an inclined flow passage being formed on the closed top and bottom of the lower and upper members to guide water to flow into the upper housing member in an inclined manner.

4. The apparatus as claimed in Claim 1, wherein the lower space of the connector has a seal ring fixed therein to define therein the flow passage which is closeable by having the check in fluid tight engagement with the seal ring.

5. The apparatus as claimed in Claim 1, wherein the tubular body of the supply control means comprises an external thread formed thereon with which an inner thread of the connector is engageable.

6. The apparatus as claimed in Claim 1, wherein the connector comprises a piercer secured therein with a point of the piercer facing the upper space of the connector and wherein the mouth of the disinfectant container comprises an opening sealed by a pierceable membrane to be broken by the piercer to allow the disinfectant contained inside the container to flow into the disinfectant reservoir.

7. The apparatus as claimed in Claim 1, wherein the sideward extension of the tubular body comprises an external thread to which a cap member having an inner thread is threadingly connected, the cap having an interior space

for receiving and holding therein the nozzle so as to secure the nozzle to the outlet of the sideward extension, the cap having an outlet to allow the disinfectant to flow out of the nozzle.

8. The apparatus as claimed in Claim 1, wherein the second means comprises a second spring disposed between the tubular body and the first means to provide a downward biasing force to the buoy.

9. The apparatus as claimed in Claim 8, wherein the tubular body comprises a spring holding groove formed thereon to receive and retain therein an end of the second spring.

10. The apparatus as claimed in Claim 1, wherein the second means comprises a water tray to receive and contain therein water of which weight acts downward upon the buoy, the water tray comprising a hole for draining water contained therein.

11. The apparatus as claimed in Claim 1, wherein the container comprises an edge having a configuration complementary to the support rim of the housing for precisely positioning the container on the housing.

12. The apparatus as claimed in Claim 1, wherein the disinfectant container comprises an O-ring disposed around the mouth thereof to provide fluid tightness between the mouth and the upper space of the connector, the mouth of the disinfectant container having an opening sealed by a pierceable membrane.